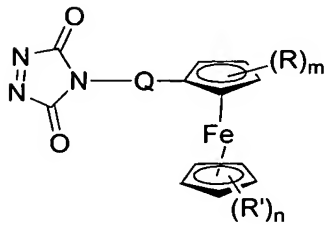
CLAIMS

1. A ferrocene compound represented by formula (1) below:



(1)

wherein Q represents a direct bond, alkylene or $-W_1-X-W_2-$ (wherein W_1 represents alkylene or phenylene; W_2 represents alkylene; X represents -O-, $-N(R_a)C(=O)-$, $-N(R_a)C(=O)NH-$, $-OC(=O)NH-$ or $-N(R_a)OS(=O)-$; and R_a represents a lower alkyl group); each of R and R' independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group, or optionally substituted carbamoyl group; m represents an integer of 1 to 3; and n represents an integer of 1 to 4.

2. The ferrocene compound according to claim 1, wherein R and R' are a hydrogen atom.

3. The ferrocene compound according to claim 1 or 2, wherein Q represents a direct bond or alkylene.

4. The ferrocene compound according to claim 1 or 2, wherein Q is methylene.

5. The ferrocene compound according to claim 1 or 2, wherein Q is a direct bond.

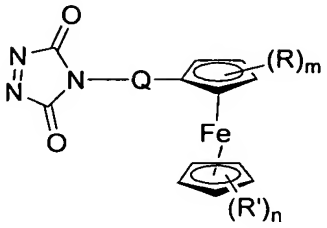
6. The ferrocene compound according to claim 1, which is 4-(ferrocenylmethyl)-1,2,4-triazoline-3,5-dione or 4-ferrocenyl-1,2,4-triazoline-3,5-dione.

7. A reagent for measuring a triene structure, comprising the ferrocene compound according to claim 1.

8. The reagent according to claim 7, which further comprises a solvent capable of dissolving the ferrocene compound.

9. A combined compound of a ferrocene compound represented by formula

(1) below, and a vitamin D compound:

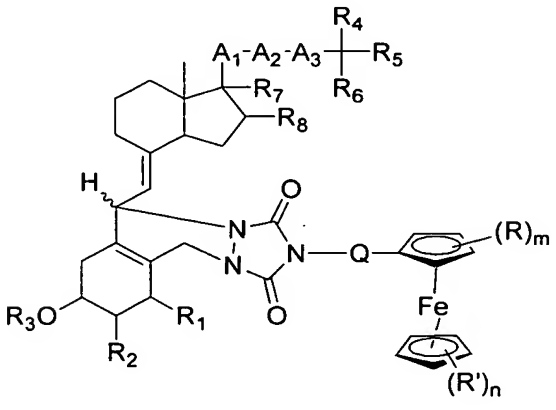


(1)

wherein Q represents a direct bond, alkylene or $-W_1-X-W_2-$ (wherein W_1 represents alkylene or phenylene; W_2 represents alkylene; X represents -O-, $-N(R_a)C(=O)-$, $-N(R_a)C(=O)NH-$, $-OC(=O)NH-$ or $-N(R_a)OS(=O)-$; and R_a represents a lower alkyl group); each of R and R' independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group, or optionally substituted carbamoyl group; m represents an integer of 1 to 3; and n represents an integer of 1 to 4.

10. The compound according to claim 9, wherein the combined compound of the ferrocene compound and a vitamin D compound is a combined compound wherein the ferrocene compound and the vitamin D compound have been combined with each other through a covalent bond.

11. The compound according to claim 9, wherein the combined compound of the ferrocene compound and a vitamin D compound is a compound represented by formula (2):



(2)

wherein each of A_1 and A_3 independently represents optionally substituted lower alkylene, optionally substituted lower alkenylene, or optionally substituted lower alkynylene; A_2 represents a direct bond, -CH=CH-, -C=C-, -O-, -S- or -NH-; R_1 represents a hydrogen atom or $-OR_9$ (R_9 represents a hydrogen atom or protecting group); R_2 represents a hydrogen atom, hydroxy group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group or optionally substituted lower acyl group; R_3 represents a hydrogen atom or protecting group; each of R_4, R_5 and R_6 independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted cycloalkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group, optionally substituted carbamoyl group or optionally substituted amino group; each of R_7 and R_8 independently represents a hydrogen atom or hydroxy group, or, R_7 and R_8 are linked together to form a double bond; Q represents a direct bond, alkylene or $-W_1-X-W_2-$ (wherein W_1 represents alkylene or phenylene; W_2 represents alkylene; X represents -O-, $-N(R_a)C(=O)-$, $-N(R_a)C(=O)NH-$, $-OC(=O)NH-$ or $-N(R_a)OS(=O)-$, and R_a represents a lower alkyl group); each of R and R' independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group or optionally substituted carbamoyl group; m represents an integer of 1 to 3; and n represents an integer of 1 to 4.

12. The compound according to claim 9, 10 or 11, wherein $A_1-A_2-A_3$ represents $-CH(CH_3)-(CH_2)_3-$, $-CH(CH_3)-CH=CH-$ or $-CH(CH_3)-CH=CH-CH=CH-$; R_1 represents a hydrogen atom or hydroxy group; R_2 represents a hydrogen atom or hydroxypropoxy group; R_3 is a hydrogen atom; each of R_4, R_5 and R_6 independently represents a hydrogen atom, hydroxy group, lower alkyl group which may optionally be substituted with halogen, or lower cycloalkyl group which may optionally be substituted with halogen; R_7 and R_8 are a hydrogen atom, or, R_7 and R_8 are linked together to form a double bond.

13. The compound according to any one of claims 9 through 12, wherein R and R' are a hydrogen atom.

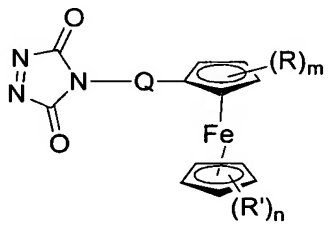
14. The compound according to any one of claims 9 through 13, wherein Q represents a direct bond or alkylene.

15. The compound according to any one of claims 9 through 13, wherein Q is methylene.

16. The compound according to any one of claims 9 through 13, wherein Q is a direct bond.

17. The compound according to any one of claims 9 through 16, wherein the vitamin D compound is a vitamin D_3 compound.

18. A method of measuring a vitamin D compound contained in a sample, which comprises reacting a ferrocene compound represented by formula (1) below:



(1)

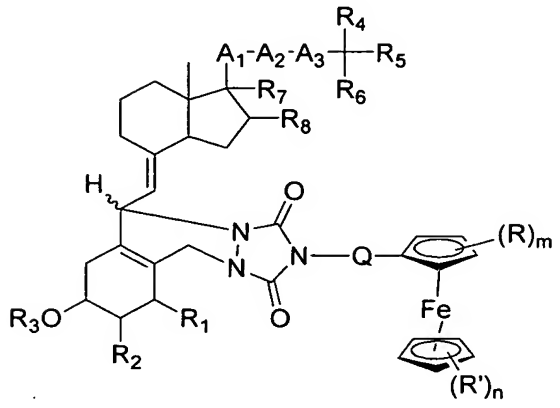
wherein Q represents a direct bond, alkylene or $-W_1-X-W_2-$ (wherein W_1 represents alkylene or phenylene; W_2 represents alkylene; X represents -O-, $-N(R_a)C(=O)-$, $-N(R_a)C(=O)NH-$, $-OC(=O)NH-$ or $-N(R_a)OS(=O)-$; and R_a represents a lower alkyl group); each of R and R' independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group, or optionally substituted carbamoyl group; m represents an integer of 1 to 3; and n represents an integer of 1 to 4,

with a vitamin D compound, and measuring the resulting combined compound of the ferrocene compound and the vitamin D compound by liquid chromatography/mass spectrometry (LC/MS).

19. The method of measuring a vitamin D compound according to claim 18, wherein the combined compound of the ferrocene compound and a vitamin D compound is a combined compound wherein the ferrocene compound and the vitamin D compound have been combined with each other through a covalent bond.

20. The method of measuring a vitamin D compound according to claim 18, wherein the combined compound of the ferrocene compound and a vitamin D

compound is a compound represented by formula (2) below:



(2)

wherein each of A_1 and A_3 independently represents optionally substituted lower alkylene, optionally substituted lower alkenylene, or optionally substituted lower alkynylene; A_2 represents a direct bond, -CH=CH-, -C=C-, -O-, -S- or -NH-; R_1 represents a hydrogen atom or $-OR_9$ (R_9 represents a hydrogen atom or protecting group); R_2 represents a hydrogen atom, hydroxy group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group or optionally substituted lower acyl group; R_3 represents a hydrogen atom or protecting group; each of R_4, R_5 and R_6 independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted cycloalkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group, optionally substituted carbamoyl group or optionally substituted amino group; each of R_7 and R_8 independently represents a hydrogen atom or hydroxy group, or, R_7 and R_8 are linked together to form a double bond; Q represents a direct bond, alkylene or $-W_1-X-W_2-$ (wherein W_1 represents alkylene or phenylene; W_2 represents alkylene; X represents -O-, $-N(R_a)C(=O)-$, $-N(R_a)C(=O)NH-$, $-OC(=O)NH-$ or $-N(R_a)OS(=O)-$, and R_a represents a lower alkyl group); each of R and R' independently represents a hydrogen atom, hydroxy group, nitro group, cyano group, halogen, optionally substituted lower alkyl group, optionally substituted lower alkenyl group, optionally substituted lower alkynyl group, optionally substituted lower alkoxy group, optionally substituted lower acyl group, optionally substituted carboxy group or optionally substituted carbamoyl group; m represents an integer of 1 to 3; and n

represents an integer of 1 to 4.

21. The method of measuring a vitamin D compound according to claim 18, 19 or 20, wherein, in the ferrocene compound and the combined compound of the ferrocene compound and a vitamin D compound, A_1-A_2-A_3 represents $-CH(CH_3)-(CH_2)_3-$, $-CH(CH_3)-CH=CH-$ or $-CH(CH_3)-CH=CH-CH=CH-$; R_1 represents a hydrogen atom or hydroxy group; R_2 represents a hydrogen atom or hydroxypropoxy group; R_3 is a hydrogen atom; each of R_4, R_5 and R_6 independently represents a hydrogen atom, hydroxy group, lower alkyl group which may optionally be substituted with a halogen, or a lower cycloalkyl group which may optionally be substituted with a halogen; R_7 and R_8 are a hydrogen atom, or, R_7 and R_8 are linked together to form a double bond.

22. The method of measuring a vitamin D compound according to any one of claims 18 through 21, wherein, in the ferrocene compound and the combined compound of the ferrocene compound and a vitamin D compound, R and R' are a hydrogen atom.

23. The method of measuring a vitamin D compound according to any one of claims 18 through 22, wherein, in the ferrocene compound and the combined compound of the ferrocene compound and a vitamin D compound, Q represents a direct bond or alkylene.

24. The method of measuring a vitamin D compound according to any one of claims 18 through 22, wherein, in the ferrocene compound and the combined compound of the ferrocene compound and a vitamin D compound, Q is methylene.

25. The method of measuring a vitamin D compound according to any one of claims 18 through 22, wherein, in the ferrocene compound and the combined compound of the ferrocene compound and a vitamin D compound, Q is a direct bond.

26. The method of measuring a vitamin D compound according to any one of claims 18 through 25, wherein the vitamin D compound in a sample is a vitamin D_3 compound.

27. The method of measuring a vitamin D compound according to any one of claims 18 through 26, wherein the sample is taken from a living body.

28. The method of measuring a vitamin D compound according to any one of claims 18 through 27, wherein the liquid chromatography/mass spectrometry (LC/MS) is liquid chromatography/electrospray ionization-mass spectrometry/mass spectrometry (LC/ESI-MS/MS).